

REMARKS

Claims 1-42 are pending in the present patent Application. Claims 43-54 have been added with this Response. Upon entry of the current amendment, claims 1-54 remain pending in the patent Application for consideration.

Reconsideration and allowance of the claims in view of the following remarks are respectfully requested.

Claims 43-54 have been added to more clearly define the claimed invention.

Claims 43-46 recite dough compositions having less than a 35 percent change in specific volume between the time of completing preparation of the dough composition through refrigerated storage. This amendment finds support in the specification, for example, at page 10, lines 2-6.

Claims 47-50 recite that an acidic active ingredient is not encapsulated. This amendment finds support in the specification, for example, at page 11, line 23 to page 12, line 9 and Runs 1 and 2 of the Examples on page 26.

Claims 51-54 recite that reaction of basic and acidic active ingredients is inhibited at refrigeration temperature, such that less than 0.46 cubic centimeters of carbon dioxide, per gram of the dough composition, evolve from the dough composition over a 12 week time period of refrigerated storage at 45°F. This amendment finds support in the specification, for example, at page 2, line 28 to page 3, line 6 and at page 9, line 30 to page 10, line 2.

Rejection Under 35 U.S.C. 103(a)

Claims 1-42 stand rejected under 35 USC 103(a) over Atwell et al. (U.S. Pat. No. 6,042,852) in view of Katz et al. (U.S. Pat. No. 4,792,456).

The rejection is traversed.

Claims 1 through 26 and claim 36

Claim 1 features a dough product wherein reaction of acidic and basic agents is inhibited at below baking temperature (e.g., during processing, packaging, and storage) and is allowed during baking upon degradation of a barrier material. This dough product can be achieved by using a combination of chemical leavening agents comprising

1) an encapsulated basic active ingredient selected based on the melting point of the barrier material, such that below baking temperature the barrier material separates encapsulated basic leavening agent from the acidic active ingredient, and the barrier material degrades at or above baking temperature, i.e., a temperature encountered during baking (e.g., about 100°F-200°F, as in claim 17), and

2) an acidic active ingredient selected based on its relatively low solubility below baking temperature and to be substantially soluble during baking.

The primary reference, Atwell et al. does not teach or suggest a dough product wherein acid, base, and barrier material components of a chemical leavening system are specifically selected as recited in claim 1, where a leavening reaction between acid and base is inhibited at below baking temperature, and whereby acid solubilizes and barrier material degrades during baking to allow acid and base to come into contact and react during baking.

Atwell et al. describe that a substantial amount of leavening reaction occurs in their dough composition during refrigerated storage. For example, Atwell et al. state:

[t]he leavening reaction in the dough continues inside the container so the desired raw dough specific volume is reached after the dough has been packaged. (See Atwell et al. at col. 3, lines 22-27.)

...

The dough, once sealed inside the container, expands in the container form and takes on the shape, imprint, or design of the container.

Indeed, the Atwell et al. reference specifies a container that is designed specifically to accommodate a leavening reaction that occurs during storage, prior to baking. The container is designed to release excess pressure caused by carbon dioxide gas that has been generated from a leavening reaction during refrigerated storage. Atwell et al. state:

[D]uring storage, the dough in the system of the present invention is kept in a low or ambient pressure environment, even as carbon dioxide continues to be generated by the dough in the container, because the container has a pressure release mechanism to release excess pressure. (See Atwell et al. at col. 6, lines 11-15).

Also, in the Atwell et al. abstract:

The container is provided with a pressure release mechanism to release excess pressure generated within the container as the dough leavens and during storage. The dough system is capable of sustaining a leavened dough structure during storage . . .

Overall, the Atwell et al. reference would not have suggested a dough product that inhibits leavening at below baking temperature (e.g., during refrigerated storage), as featured in claim 1, because the Atwell et al. reference is directed to a dough that undergoes substantial leavening during refrigerated storage. The reference does not discuss or otherwise suggest that their leavening reaction could or should be inhibited during storage or delayed until baking, e.g., the reference does not describe how to inhibit reaction of the basic and acidic agents until baking based on selection of the melting properties of the barrier material, the solubility of the acidic agent, and encapsulation of the basic agent.

Because Atwell et al. do not teach or suggest the result of inhibiting a leavening reaction during storage, the reference also fails to teach or suggest how that result is accomplished as recited in claim 1, including selecting a specific combination of an encapsulated basic agent, a relatively low solubility acidic agent, and a barrier material that separates acid from base at below baking temperature and degrades during baking, at or above baking temperature to allow acid and base to react.

With respect to the “encapsulated basic active ingredient” feature of claim 1, Atwell et al. very generally describe that either or both of a leavening acid or base may be encapsulated (and in fact even allow for neither to be encapsulated). This fails to teach or suggest the specific features or effects of the invention as recited in claim 1, to inhibit a leavening reaction during storage so that substantial leavening can occur during baking. At the time of Applicant’s invention, encapsulation was used for reasons other than as featured in claim 1. For example, prior to Applicant’s invention, encapsulation of a leavening agent was used to increase line time during processing of a dough composition, and to allow packaging prior to excessive volume increase. Applicant noted this use of encapsulation in the specification at page 1, lines 29-31:

Presently, some encapsulated sodas are used in dough compositions to retard leavening reaction for minutes or fractions of an hour, e.g., one-half hour, to allow packaging a dough product in a can prior to an excessive volume increase.

Thus, the general description in Atwell et al. of the use of encapsulated acidic or basic components fails to teach or suggest Applicant’s specific use of an encapsulated basic chemical leavening agent, in combination with a low solubility acidic agent, and with a barrier material that degrades during baking to allow the reactants to come into contact and react to substantially leaven the dough composition during baking. This is particularly true because the

Atwell et al. reference actually teaches away from inhibiting the leavening reaction during storage and toward a leavening reaction that occurs during storage, to allow the dough composition to substantially expand within its package.

Further, the Atwell et al. reference fails to specifically suggest the use of low solubility acid in combination with encapsulated basic agent and with a barrier material that degrades during baking, to allow the reactants to come into contact and react to substantially leaven the dough composition during baking. The Atwell et al. reference includes a general listing of acidic leavening agents that includes a variety of agents having a wide range of solubilities, some having relatively high solubilities and others having relatively low solubilities. Atwell et al. treat each of these different acidic agents as equivalent and make no suggestion of selecting one over the other based on solubility (see Atwell et al. at col. 5, lines 14-29). Thus, the Atwell et al. reference fails to suggest the specific selection of acidic agents with these solubility properties from among the general list. Atwell et al., moreover, fail to suggest selecting the relatively low solubility acidic agent in combination with an encapsulated basic agent and the recited barrier material, to inhibit a leavening reaction at below baking temperature and allow for reaction of acid and base during baking and substantial leavening during baking.

Thus, Atwell et al. neither teach nor suggest all of the features of claim 1.

The secondary reference, Katz et al., fails to cure the deficiencies of the Atwell et al. reference. Katz et al., for example, fail to teach or suggest a dough product that contains the claimed combination of a relatively low solubility acidic ingredient with an encapsulated basic active ingredient. Indeed, the Office Action states at page 3 that “[t]he Katz et al. reference was only relied upon for the teaching of encapsulating material.”

The Office action states that it would have been obvious to use a low solubility acid as claimed, because Atwell et al. disclose such acids, and because it would have been suggested to use various combinations including sodium aluminum sulfate in combination with encapsulated basic agent. These bases for the rejection are insufficient, however, because (even if true, which is not admitted) they do not address every feature of claim 1. For example, the Office action still fails to address how the prior art is believed to suggest, in addition to a recited relatively low solubility acidic agent and encapsulated basic agent, the selection of a barrier material having the recited melting properties, or the claimed effect of inhibiting

reaction between the base and the acid at below baking temperature and allowing acid and base to react during baking. Thus, the rejection does not address all features of claim 1.

In conclusion, independent claim 1 has not been shown to be obvious over Atwell et al. in view of Katz et al. Claims 2-26 and 36, each depending from claim 1, likewise has not been shown to be obvious, and the rejection of these claims should be withdrawn.

Claims 29 through 34 and claim 36

Claim 29 recites a method having features including a dough composition comprising a combination of an encapsulated basic active ingredient, a relatively low solubility acidic agent, and a barrier material that melts during baking to expose one or more of the basic or acidic ingredients to allow acid and base to react to leaven the dough composition during baking.

The Office action fails to address how the prior art is thought to suggest all of the features of the claimed method in combination, including a dough composition that contains a relatively low solubility acidic agent (at below baking temperature) in combination with an encapsulated basic agent and a barrier material that melts during baking. Moreover, the Office action fails to describe how the prior art is believed to teach or suggest a method wherein during baking, barrier material melts and basic and active ingredients are allowed to react to leaven the dough composition during baking.

As discussed above, the Atwell et al. reference describes a variety of basic agents and acidic agents, and allows for encapsulation of either, both, or neither. The acidic agents include a variety of acidic agents having a wide range of solubilities. The Atwell et al. reference also teaches that the dough composition experiences substantial leavening during refrigerated storage, which means that acidic and basic components contact each other and react to a substantial degree during storage. Atwell et al. also fail to teach or suggest a barrier material that is selected specifically to melt during baking, especially in combination with an acidic agent with relatively low solubility at below baking temperature.

The cited references have not been shown to teach or suggest the combination of features recited in claim 27, including an acidic agent having a relatively low solubility at below baking temperature, an encapsulated basic agent, and a barrier material that melts during baking to expose one or more of the acidic or basic ingredients and allow the basic and acidic ingredients to react to leaven the dough composition during baking. It is believed, therefore,

that the rejection of claim 29 can be withdrawn, as well as the rejections of claims 30 through 34 and claim 36.

Claims 27 and dependant claims 28

Claim 27 features a dough product comprising an encapsulated basic agent and a barrier material that has a solid fat index of at least about 50% at 75 °F and degrades during baking, at or above baking temperature. The primary reference, Atwell et al., fails to teach or suggest this combination of ingredients in a dough product.

The Atwell et al. reference describes a variety of basic agents and acidic agents and allows for encapsulation of either, both, or neither. The Atwell et al. reference describes that the dough composition experiences substantial leavening during refrigerated storage, which means that the acidic and basic components contact each other and react to a substantial degree during storage. Atwell et al. also fail to teach or suggest a barrier material that has a solid fat index of at least about 50% at 75 °F and degrades at or above baking temperature, as recited in claim 27.

The Office Action relies on the secondary reference, Katz et al., to cure deficiencies of the Atwell et al. reference (see the Office Action at page 3). However, Katz et al. fail to cure the deficiencies of Atwell et al. Katz et al. fail to teach the use of a barrier material that has a solid fat index of at least about 50% at 75 °F.

The Office Action states:

*Katz et al. disclose the leavening agents are coated with hydrogenated palm oil.
If the oil is the same, then it obviously has the same solid fat index as claimed.*

Applicant disagrees that the palm oil discussed by Katz et al. “obviously has the same solid fat index as claimed.” Applicant noted in the previous Response that not all partially hydrogenated vegetable oils or palm oils have a solid fat index of at least about 50% at 75F. Solid fat index can vary, for example, depending on whether a material is fractionated or unfractionated. Thus, Katz et al. do not necessarily teach a barrier material that has a solid fat index of at least about 50% at 75 °F, as featured in claim 27.

Claim 27 would not have been obvious over Atwell et al. in view of Katz et al. Claims 28, 37, 38, and 39, each dependant on claim 27 likewise would not have been obvious over Atwell et al. in view of Katz et al.

Claims 35 and 40 through 42

Claim 35 recites a method having features including a dough composition comprising a combination of an encapsulated basic active ingredient and a barrier material that has a solid fat index of at least about 50% at 75 °F.

The Atwell et al. reference describes a variety of basic agents and acidic agents, and allows for encapsulation of either, both, or neither. The Atwell et al. reference also teaches that the dough composition experiences substantial leavening during refrigerated storage, which means that the acidic and basic components contact each other and react to a substantial degree during storage. There is no showing of a preference for a barrier material as recited in claim 27.

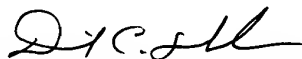
The Katz et al. reference has not been shown to cure the deficiencies of the Atwell et al. reference. Katz et al. do not necessarily teach a barrier material that has a solid fat index of at least about 50% at 75 °F and degrades at or above baking temperature, as featured in claim 27.

Overall, the references have not been shown to teach or suggest the combination of features recited in claim 35, including an acidic agent having a relatively low solubility at below baking temperature; an encapsulated basic agent; and a barrier material that has a solid fat index of at least about 50% at 75°F.

It is believed, therefore, that the rejection of claim 35 can be withdrawn, as well as the rejections of claims 40 through 42.

The Examiner is invited to contact the undersigned, at the Examiner's convenience, should the Examiner have any questions regarding this communication or the present patent Application.

Respectfully Submitted,

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